

SR-12

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TO BOULDER

Context Sensitive Committee



*Coming together is a beginning.
Keeping together is progress.
Working together is success.*

Henry Ford

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Context Sensitive Committee Goals

Goals identified in Charter:

- ☒ Identify Context
- ☒ Identify Needs
- ☒ Develop Evaluation Criteria
- ☒ Identify Conceptual Solutions
- ☐ Screen Solutions and Identify Preliminary Alternatives

--Context Sensitive Committee Charter: February 2005

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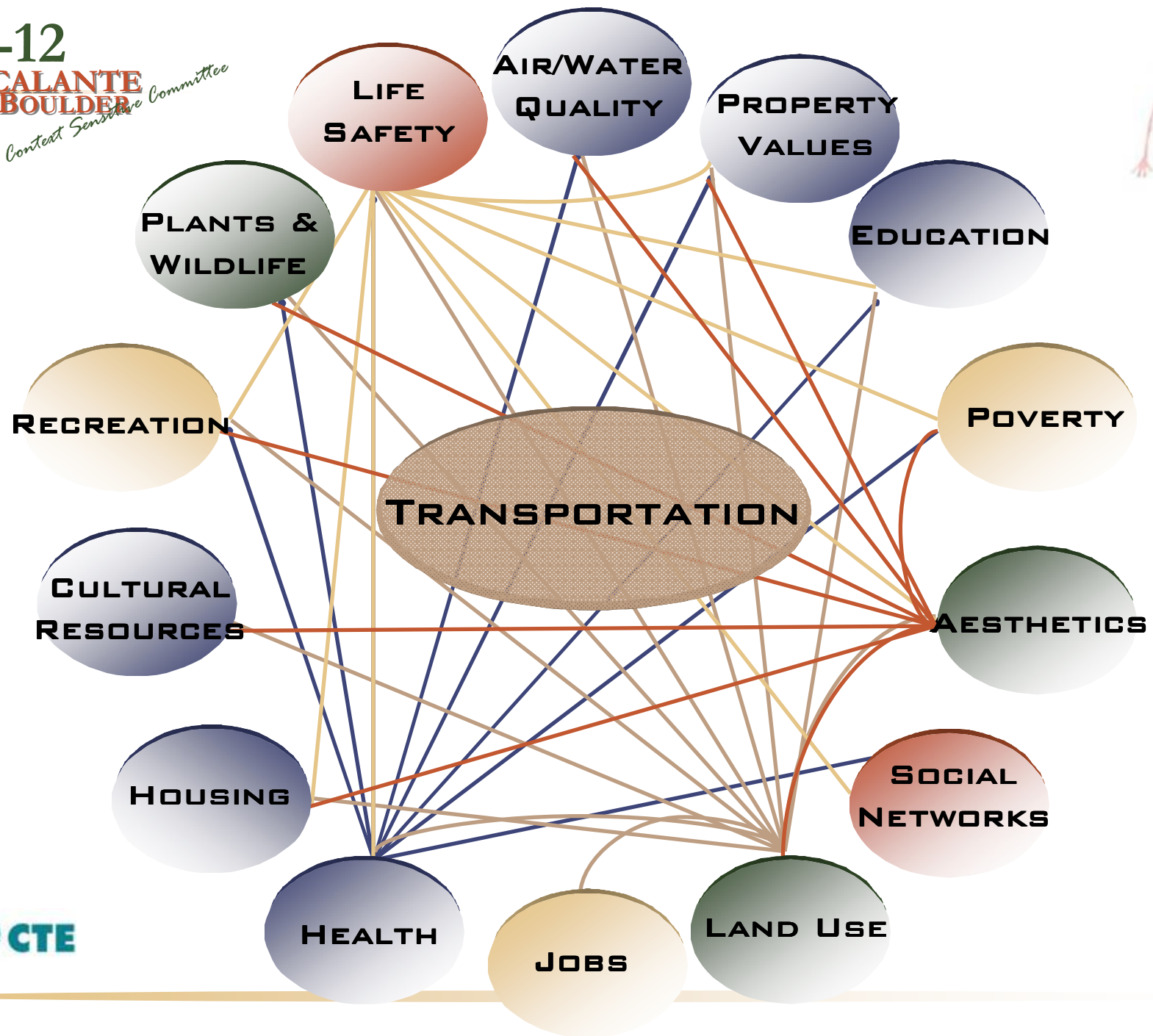
Guiding CSS Principles

- Address the Transportation Need
- Be an Asset to the Community
- Be Compatible with the Natural and Built Environments



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Quality Decisions

- **Effective** decision-making results in appropriate solutions to the identified problems
 - **Efficient** decision-making gets the right solution the first time through the process
-

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Define the Problem and Vision

- Key product of problem definition
 - Describes desired **outcomes** for:
 - Transportation Need
 - Being a Community Asset
 - Compatibility with Human and Natural Environment
 - Creates a common mental map for success
-

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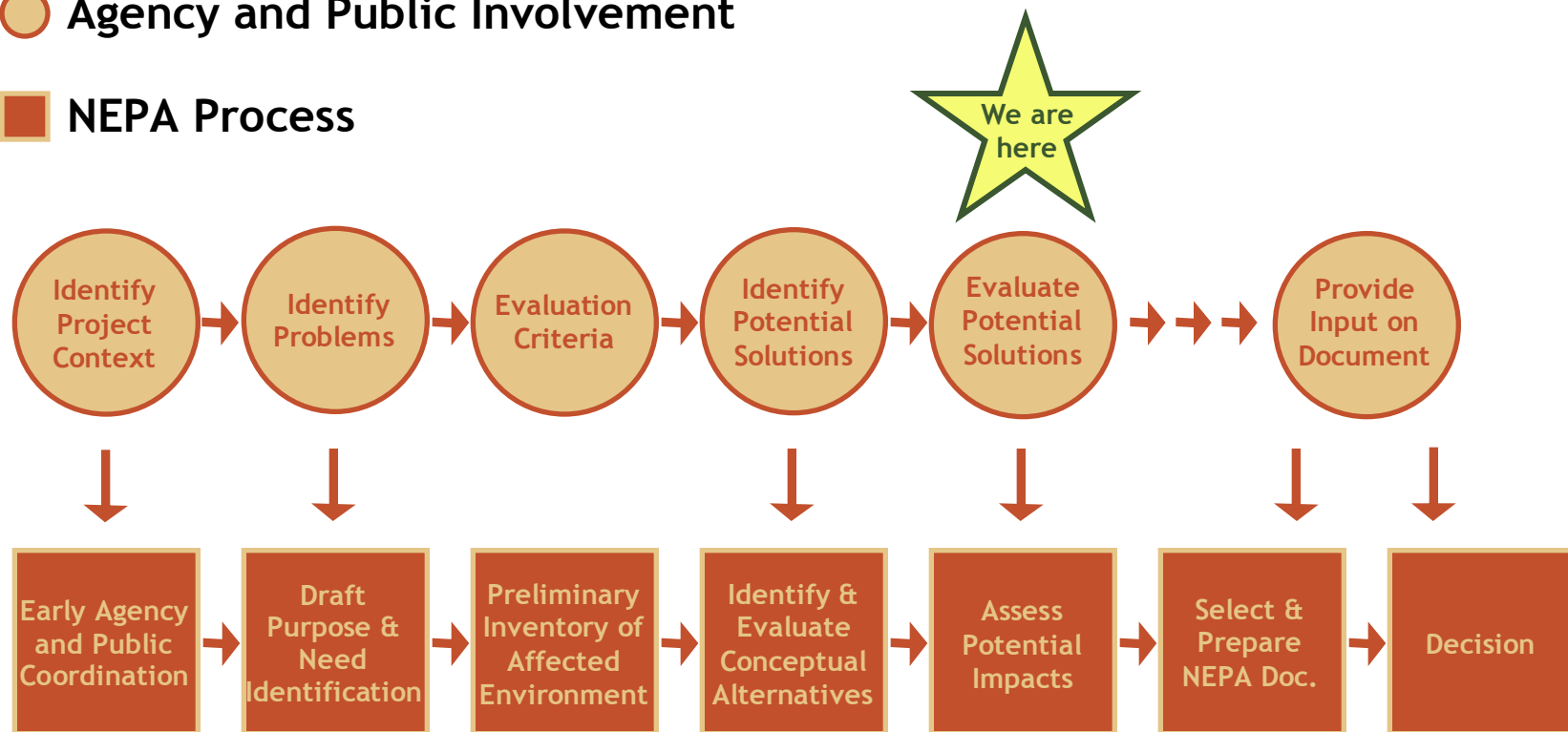
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SR 12 Project Approach

○ Agency and Public Involvement

■ NEPA Process



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Project Visioning

Meeting #1

Context and Needs

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Contribute to
a future for
the young

**A project the
communities
are proud of**

Meet the traffic
demands



Enhance
experiences

*Make sure the right
thing gets done*

**The best for the
community**

*Maintain
visual
appeal*

**Comprehensive
approach**

*Maintain
character of
the road*

**A safe and
even more
beautiful road**



Some improvements

**Maintain SR-12
as the life-
blood of the
county**

*Limit
changes*

**Addresses the vision
of each group**

Do only what is
absolutely
necessary

**Don't
change the
road too
much**

Travel safety
across

*Honor the history
and culture of
the communities*

**Make a
little safer**

Take time to do it
better

*Grow to fit
increasing traffic*

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Quality of Light

Experience

Creamery Route



Quiet

Tribal Culture

Canyons

Awe

History

Ranchers

More than a Road

Museum

Beautiful

Big

Country Solitude



What is the Context of the SR-12 area?



Slow

Archaeology

**Walk to
Experience**

Tourism

Emotional

Dangerous

Scenic

Mule Trails

See . . . So Far

Speechless

Mountains

Home

Petroglyphs



Great Driving

Cultural Values

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Project Visioning

Meeting #2

Needs and Evaluation Criteria

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Project Needs



Identified by Group 1: Rick Torgerson, Jim Catlin, Sharol Bernardo

- Make sure there is enough height clearance for large vehicles under the dark red cliff near Calf Creek. The perception is that it is not high enough and large vehicles are darting into the other lane
 - Mitigate extreme speed changes. Make speed transition zones for areas between a high to low speed change
 - Use an aesthetic approach to structures, walls, barriers, etc. Lower the height of the barriers
 - Need for parking restrictions
 - Maintain visual appeal for highway and non-highway users
 - Create uphill bicycle pullouts/lanes (where conducive)
 - Create passing pullouts/lanes
 - Put the utilities underground
 - Create better/more interpretive sites
-

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Project Needs

Identified by Group 2: John Mavor, Keith Gailey, Sue Mosier, Allysia Angus

- Pullouts for hikes / recreation parking (*Move parked vehicles off the road*)
 - Safe passage for cyclists
 - Fix Calf Creek bridge
 - Fix where pipe / barriers are supporting road
 - Speed – creative and effective deterrents depending on locations (*Slow down traffic in certain locations*)
 - Address cattle / wildlife crashes
 - Right-of-way – sort this out
-

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Project Needs

Identified by Group 3: Laurel Hagen, Vard Coombs, Joe Gregory

- Turnouts near scenic or slow areas. (Maybe a foot path along Hogsback)
 - Hogsback safety
 - Opportunities for passing
 - Make improvements with minimal impact
 - Force people to slow down (signs, bumps, etc.)
 - Rebuild Calf Creek Bridge
 - Bike safety
 - Use universal signage (i.e. graphic depicting a car with rocks falling on it) for non-English speaking tourists and visitor's
 - Do not make it look over engineered
-

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Project Needs

Identified by the public

- Protect archaeological and paleontological sites (i.e. dinosaur tracks)
 - Reduce speed
 - Evaluate safe ingress and egress (specifically at businesses and trailheads)
 - Provide maintenance notification
 - Widen in some areas for safety
 - Improve aesthetics of (safety) barriers
 - Bicycle safety
 - Safety signing (ice, deer, cows, etc.)
-

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Context Sensitive Objectives

Project Vision Defined by CSC	Context Sensitive Objectives
<ul style="list-style-type: none">▪ A project communities are proud of▪ The best for the community▪ Maintain SR-12 as the life blood of the community▪ Contribute to a future for the young▪ Honor the history and culture of the communities	<ul style="list-style-type: none">▪ Preserve the history▪ Contribute to the economics and the culture of the community
<ul style="list-style-type: none">▪ Meet the traffic demands▪ Grow to fit increasing traffic▪ Some improvements▪ Make a little safer▪ Travel safely across▪ A safe and more beautiful road	<ul style="list-style-type: none">▪ Meet the varied transportation needs▪ Improve safety
<ul style="list-style-type: none">▪ Do only what is absolutely necessary▪ Limit changes▪ Prevent conflicting uses in the area	<ul style="list-style-type: none">▪ Meet the needs of the natural environment
<ul style="list-style-type: none">▪ Maintain character of the road▪ Enhance experiences	<ul style="list-style-type: none">▪ Maintain the character of the road
<ul style="list-style-type: none">▪ Maintain visual appeal	<ul style="list-style-type: none">▪ Maintain and enhance the visual appeal

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Context Sensitive Objectives



Comments Received from Public	Context Sensitive Objectives
<ul style="list-style-type: none">▪ Better maintenance▪ Road needs to be resurfaced▪ Concern regarding road conditions▪ Maintenance should be good quality and subtle▪ Identify long-term solutions for maintenance▪ Eliminate need for frequent small maintenance projects	<ul style="list-style-type: none">▪ Improve ability to perform adequate maintenance operations appropriate to place.
<ul style="list-style-type: none">▪ Tourist traffic is difficult▪ Slow moving trucks and RVs▪ Summer traffic is really heavy for the size of the road▪ There is a safety problem when it comes to bicycles	<ul style="list-style-type: none">▪ Balance the needs of the different modes of transportation
<ul style="list-style-type: none">▪ Turnouts are needed▪ No more ugly barriers▪ Improvements need to be sensitive in order to preserve landscape quality▪ Provide an alternative route for traffic to avoid Calf Creek and reduce traffic in Boulder	<ul style="list-style-type: none">▪ Incorporate safety improvements that are consistent with the context of the roadway and environment.

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Context Sensitive Objectives



Comments Received from Public (cont'd.)	Context Sensitive Objectives
<ul style="list-style-type: none">▪ Preserve Calf Creek	<ul style="list-style-type: none">▪ Preserve water resources
<ul style="list-style-type: none">▪ Use science, research, and facts in making decisions.	<ul style="list-style-type: none">▪ Incorporate science, research, and facts into an open decision-making process
<ul style="list-style-type: none">▪ Address safety along SR-12▪ Other areas along SR-12 need improvements▪ Dangerous curves located near Boulder▪ Danger from cattle on the road	<ul style="list-style-type: none">▪ Improve Safety on SR-12

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Project Visioning

Meeting #3

***Preliminary Alternative
Development***

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Critical Review Elements

1. Posted Speed
 2. Travel Lane Widths
 3. Shoulder Widths
 4. Horizontal Alignments (curves on roadway)
 5. Vertical Alignments (crests and valleys on roadway)
 6. Grade of Roadway (how steep is the roadway)
 7. Sight Distance (how far ahead of me can I see)
-



Critical Review Elements (Cont.)

8. Cross Section (slope on the side of the roadway, obstructions close to roadway)
 9. Superelevation (how steep is the bank on a curve)
 10. Structural Capacity (Structural Rating of bridge)
 11. Vertical Clearance (overhead obstructions)
 12. Bridge Width
 13. Crash Data
 14. Pavement Conditions
-

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Standard Roadway Information



CRITICAL ROADWAY ELEMENT	AASHTO	UDOT	U.S. Forest Service	UDOT's 3R's	AASHTO Bicycle	SR-12
LOS						
Rural Mountainous Arterial	C	C	n/a	n/a		
Design Speed (mph)						
SR-12 (Escalante to Boulder)	35-60 (posted)			Posted or advisory speed		
Lane Widths (ft)						
Thru Lane (30-35 mph)	12	12	11 (30 mph)	Design lane width to current UDOT Design Standards	14' outside lane if no shoulder, 15' preferred where there are steep grades or where grades reduce useable width (with no shoulder); then consider striping shoulder	
Thru Lane (40-60 mph)	12	12	12 (50 mph)			
Passing Lane	12	12	n/a			
Climbing Lane	12	12	n/a			
Shoulder Widths (ft)						
Thru Lane (Rural Arterial)	2' (min.), 8' (desirable)	2' (min.), 8' (desirable)	n/a	4' (in place), 8' (desirable)	4' minimum clear of rumble strips, 5' if guardrail or barrier. Wider shoulders desirable where v>50 mph	
Thru Lane (Rural Road)	2' (min.), 8' (desirable)	2' (min.), 8' (desirable)	n/a	4' (in place), 8' (desirable)		
Minimum shoulder	2	2	1 - 2'	n/a		
Passing Lane	2' (min.), 8' (desirable)	2' (min.), 8' (desirable)	n/a	n/a		
Climbing Lane	2' (min.), 8' (desirable)	4' (min.), 8' (desirable)	n/a	n/a		
Horizontal Alignment						
30 mph	R _{min} = 231'	R _{min} = 231'	R _{min} = 110' - 270'	If curve is within 15 mph of design speed Mitigate super elevation for existing substandard design elements. Mitigate or reconstruct horizontal curve to current UDOT standards based on Cost/Benefit analysis**		
35 mph	R _{min} = 340'	R _{min} = 340'	R _{min} = 150' - 420'			
40 mph *	R _{min} = 485'	R _{min} = 485'	R _{min} = 200' - 500'			
45 mph *	R _{min} = 643'	R _{min} = 643'	R _{min} = 250' - 600'			
50 mph *	R _{min} = 833'	R _{min} = 833'	R _{min} = 310' - 800'			
55 mph	R _{min} = 1060'	R _{min} = 1060'	n/a			
60 mph	R _{min} = 1330'	R _{min} = 1330'	n/a			
HSO(Horizontal Sightline Offset)	Exhibit 3-53	Exhibit 3-53	n/a	n/a		
			R = function of velocity, superelevation, friction factor. Minimum 50' for 15 mph or less	**Mitigation includes traffic control devices, shoulder widening, curve widening, appropriate super elevation, pavement friction improvement		
* Not posted speeds, provided for information only						
Vertical Alignment						
Crest	Exhibit 3 - 71	AASHTO Exhibit 3 - 71	L = (greater of) 3V or 50'	If curve is within 20 mph of design speed Minor design improvements. Otherwise reconstruct		
Sag	Exhibit 3 - 74	AASHTO Exhibit 3 - 74	L = (greater of) AV ² /2 or 50'			
Grades						
Minimum	0.5%	0.3%	1% on soil aggregate	Existing grades to remain unless in conjunction with vertical curve reconstruction. Consider flattening grades to provide climbing lanes or run away truck ramps if high accident rates are a result of steep grades.		
Maximum (30 mph)	7 - 12%	7 - 12%	6 - 12%			
Maximum (35 mph)	n/a	n/a	n/a			
Maximum (40 mph *)	8%	8%	n/a			
Maximum (45 mph *)	7%	7%	n/a			
Maximum (50 mph *)	7%	7%	n/a			
Maximum (55 mph)	6%	6%	n/a			
Maximum (60 mph)	6%	6%	n/a			
* Not posted speeds, provided for information only						
Sight Distance						
Stopping Sight Distance						
Minimum (30 mph)	200	200	180			
Minimum (35 mph)	250	250	225			
Minimum (40 mph *)	305	305	270			
Minimum (45 mph *)	360	360	320			
Minimum (50 mph *)	425	425	375			
Minimum (55 mph)	495	495	n/a			
Minimum (60 mph)	570	570	n/a			
Passing Sight Distance						
Minimum (30 mph)	1090	1090	AASHTO "A Policy on Geometric Design of Rural Highways" 1995			
Minimum (35 mph)	1280	1280	-			
Minimum (40 mph *)	1470	1470	-			

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Project Visioning

Meeting #4

Conceptual Solutions and Evaluation Process

Conceptual Solutions



Horizontal Curves at the Bottom of Head of the Rocks

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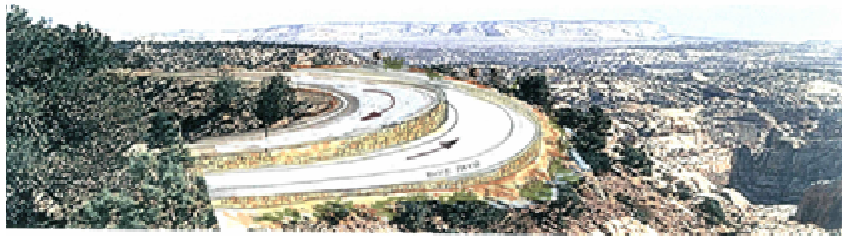
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Conceptual Solutions



Vertical Curves at the Bottom of Head of the Rocks

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The Hogsback

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Context Sensitive Committee Goals

Goals identified in Charter:

- ☒ Identify Context
- ☒ Identify Needs
- ☒ Develop Evaluation Criteria
- ☒ Identify Conceptual Solutions
- ☐ Screen Solutions and Identify Preliminary Alternatives

--Context Sensitive Committee Charter: February 2005

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Project Visioning

Meeting #5 *Evaluation of* *Conceptual Solutions*

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Meeting #5

Project Visioning

- Review Updates Since Last Meeting
 - Re-Visit Conceptual Solutions
 - Identify Preliminary Alternatives
 - Future of the CSC
-

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Updates Since Last Meeting Project Team Committee Members

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Committee Concerns

- **Travel Speed at Night**
 - **Average Daily Traffic Estimates**
 - **Accident Rates**
 - **Bike Path Standards**
-

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Conceptual Ideas



- Received over 450 Ideas
- Project Team Consolidated Ideas
 - Five Major Categories
 - Multiple Options

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Conceptual Ideas Five Categories



- Do Nothing
 - Educational Improvements
 - Regulatory Actions
 - Build Bypass
 - Improve Existing SR 12
-

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Conceptual Ideas: Not To Be Carried Forward



- Bypass – not feasible

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Conceptual Ideas: To Be Carried Forward



- Do Nothing
 - Educational Improvements
 - Improve Existing SR-12 Solutions
 - Improve signing and striping
 - Provide centerline pavement treatment
 - Coordinate with agencies to improve access at interpretive sites
 - Obtain Right-of-Way
 - Improve maintenance activities
-

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Conceptual Ideas: For Discussion



- Regulatory Actions
 - Speed Limit Modification
 - Speed Limit and Parking Enforcement
 - Bicycle Restriction

 - Improve Existing SR-12 - *Clarify use based on context*
 - Widen Roadway Shoulder
 - Accommodate Bicycles
 - Provide Passing Opportunities
 - Improve access at intersections
 - Improve animal control option
 - Improve speed transition option
 - Improve geometrics option
 - Improve clear zone option
-

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Group Exercise Summary



- Top Five Concerns
- Conceptual Ideas to Carry Forward



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Phase II Milestones

November 2005 - October 2006

- Develop Preliminary Alternatives
- Identify Alternatives for Detailed Studies
- Prepare Detailed Studies of Environmental Resources
- Define Environmental Impacts due to Alternatives
- Determine Mitigation Requirements (if needed)
- Prepare Draft Environmental Document
- Hold Public Hearing
- Select Preferred Alternative
- Prepare Final Environmental Document

Public Involvement will be ongoing throughout Phase II.

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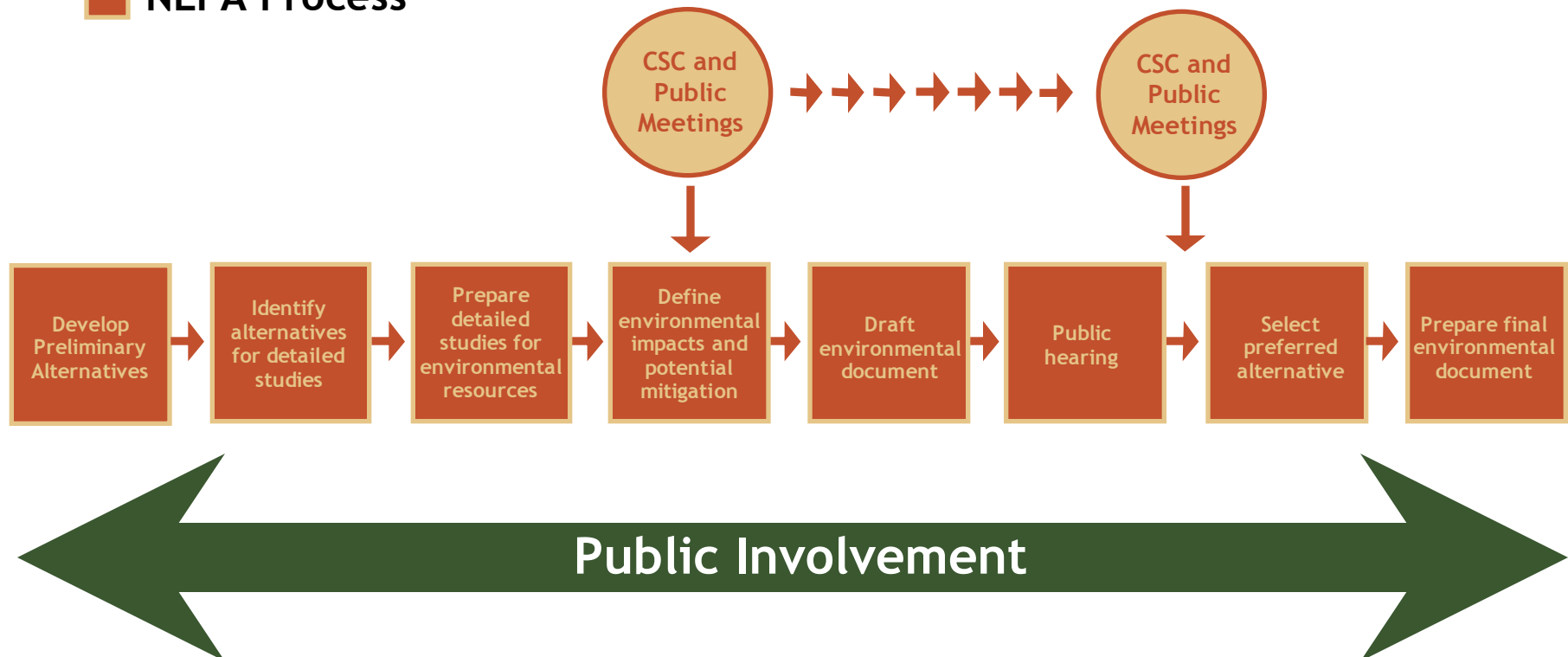
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SR 12 Project Milestones: Phase II

○ Context Sensitive Committee/Public Meetings

■ NEPA Process



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Thank You!

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Problems to be Addressed

- Insufficient right-of-way to maintain the road
 - Calf Creek Bridge in poor condition
 - Deteriorated roadway surface
 - Instability of side slope / shoulder
 - Difficulty maintaining drainage system (inlet and outlet)
 - Inadequate and / or lack of protection of side slopes
 - Lack of material borrow sites and disposal sites
 - Unsafe condition due to speed differential (between different users)
 - Variable geometrics (horizontal, vertical, clear zone, sight distance, vertical clearance)
 - Inadequate speed transition zones
 - Lack of area for adequate turnaround
-

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Problems to be Addressed

- Insufficient distance to stop or avoid an unexpected object (rocks)
 - Excessive speed accidents
 - Excessive accidents involving animals
 - Conflicts of moving cars at intersections (Hole-in-the-Rock-Road, Calf Creek Campground, Boynton Overlook, Boulder dump)
 - Perception of insufficient vertical clearance
 - Lack of passing ability for different modes of transportation
 - Lack of roadway width to accommodate multiple users (including bikes)
 - Tourist traffic and pedestrians impeding traffic
 - Roadside Parking outside of designated areas
-